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Substitute for form 1449A-PTO

**INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT**

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Sheet 1 Of 8

**COMPLETE IF KNOWN**

Application Number	10/026,016
Filing Dat	December 20, 2001
First Named Inventor	Ralph Johnson
Art Unit	2828
Examiner Name	Tuan M Nguyen
Attorney Docket Number	V637-02673 US

**U.S. PATENT DOCUMENTS**

Examiner Initials*	Cite No <sup>1</sup>	Document Number		Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear
		Number	Kind Code <sup>2</sup> (if known)			
TN		US 4445218		04-24-1984	Coldren	
		US 4608697		08-26-1986	Coldren	
		US 4622672		11-11-1986	Coldren et al.	
		US 4829347		05-09-1989	Cheng et al.	
		US 4873696		10-10-1989	Coldren et al.	
		US 4896325		01-23-1990	Coldren	
		US 5045499		09-03-1991	Nishizawa et al.	
		US 5082799	A	01-21-1992	Holmstrom et al.	
		US 5245622	A	09-14-1993	Jewell et al.	
		US 5251225	A	10-05-1993	Eglash et al.	
		US 5293392	A	03-08-1994	Shieh et al.	
		US 5343487	A	08-30-1994	Scott et al.	
		US 5358880	A	10-25-1994	Lebby et al.	
		US 5365540	A	11-15-1994	Yamanaka	
		US 5392307	A	02-21-1995	Sugiyama et al.	
		US 5416044	A	05-16-1995	Chino et al.	
		US 5422901	A	06-06-1995	Lebby et al.	
		US 5468343	A	11-21-1995	Kitano	
		US 5491710	A	02-13-1996	Lo	
		US 5513204	A	04-30-1996	Jayaraman	
		US 5568504	A	10-22-1996	Kock et al.	
TN		US 5588995	A	12-31-1996	Sheldon	
		US 5631472	A	05-20-1997	Cunningham et al.	
		US 5693180	A	12-02-1997	Furukawa et al.	
		US 5719891	A	02-17-1998	Jewell	
		US 5719894	A	02-17-1998	Jewell et al.	

Examiner  
Signature

Tuan M Nguyen

Date  
Considered

5-20-03

EXAMINER: Initial if reference is considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. <sup>1</sup>Applicant's unique citation designation number (optional). <sup>2</sup>See Kinds Codes of USPTO Patent Documents at [www.uspto.gov](http://www.uspto.gov) or MPEP 901.01. <sup>3</sup>Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). <sup>4</sup>For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. <sup>5</sup>Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. <sup>6</sup>Applicant is to place a check mark here if English language Translation is attached.

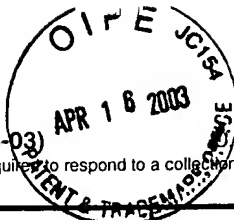
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PTO/SB/08A (04-03)  
Approved for use 04-30-2003. OMB 0651-0031

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## INFORMATION DISCLOSURE STATEMENT BY APPLICANT

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Sheet 2 Of 8

### COMPLETE IF KNOWN

Application Number	10/026,016
Filing Date	December 20, 2001
First Named Inventor	Ralph Johnson
Group Art Unit	2828
Examiner Name	Tuan M Nguyen
Attorney Docket Number	V637-02673 US

TN	US	5719895	A	02-17-1998	Jewell et al.	
	US	5729567	A	03-17-1998	Nakagawa	
	US	5732103	A	03-24-1998	Ramdani et al.	
	US	5747366	A	05-05-1998	Brillouet et al.	
	US	5754578	A	05-19-1998	Jayaraman	
	US	5757833	A	05-26-1998	Arakawa et al.	
	US	5805624	A	09-08-1998	Yang et al.	
	US	5809051	A	09-15-1998	Oudar	
	US	5815524	A	09-29-1998	Ramdani et al.	
	US	5818862	A	10-06-1998	Salet	
	US	5825796	A	10-20-1998	Jewell et al.	
	US	5835521	A	11-10-1998	Ramdani et al.	
	US	5877038	A	03-02-1999	Coldren et al.	
	US	5883912	A	03-16-1999	Ramdani et al.	
	US	5898722	A	04-27-1999	Ramdani et al.	
	US	5903586	A	05-11-1999	Ramdani et al.	
	US	5912913	A	06-15-1999	Kondow et al.	
	US	5943357	A	08-24-1999	Lebby et al.	
	US	5943359	A	08-24-1999	Ramdani et al.	
	US	5956363	A	09-21-1999	Lebby et al.	
	US	5960018	A	09-28-1999	Jewell et al.	
	US	5974073	A	10-26-1999	Canard et al.	
	US	5978398	A	11-02-1999	Ramdani et al.	
	US	5985683	A	11-16-1999	Jewell	
	US	5991326	A	11-23-1999	Yuen et al.	
	US	6021147	A	02-01-2000	Jiang et al.	
	US	6046065	A	04-04-2000	Goldstein et al.	
	US	6049556	A	04-11-2000	Sato	
	US	6052398	A	04-18-2000	Brillouet et al.	
	US	6057560	A	05-02-2000	Uchida	
	US	6061380	A	05-09-2000	Jiang et al.	
TN	US	6061381	A	05-09-2000	Adams et al.	

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*Tuan M Nguyen*

Date  
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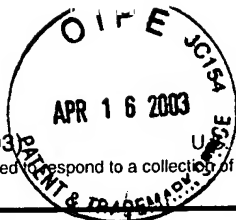
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Sheet 3 Of 8

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First Named Inventor	Ralph Johnson
Group Art Unit	2828
Examiner Name	Tuan M Nguyen
Attorney Docket Number	V637-02673 US

TN	US	6121068	A	09-19-2000	Ramdani et al.	
	US	6127200	A	10-03-2000	Ohiso et al.	
	US	6148016	A	11-14-2000	Hegblom et al.	
	US	6195485	B1	02-27-2001	Coldren et al.	
	US	6207973	B1	03-27-2001	Sato et al.	
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	US	6314118	B1	11-06-2001	Jayaraman et al.	
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	US	6359920	B1	03-19-2002	Jewell et al.	
	US	6362069	B1	03-26-2002	Forrest et al.	
	US	6366597	B1	04-02-2002	Yuen et al.	
	US	6372533	B2	04-16-2002	Jayaraman et al.	
	US	6424669	B1	07-23-2002	Jiang et al.	
	US	6434180	B1	08-13-2002	Cunningham	
	US	6542530	B1	04-01-2003	Shieh et al.	
	US	2002/ 0067748	A1	06-06-2002	Coldren et al.	
	US	2002/ 0071464	A1	06-13-2002	Coldren et al.	
	US	2002/ 0075920	A1	06-20-2002	Spruytte et al.	
	US	2002/ 0071471	A1	06-13-2002	Kim et al.	
	US	2002/ 0075929	A1	06-20-2002	Cunningham	
	US	2002/ 0090016	A1	07-11-2002	Coldren et al.	
	US	2002/ 0131462	A1	09-19-2002	Line et al.	
TN	US	2003/ 0053510	A1	03-20-2003	Yuen et al.	

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Signature*Tuan M Nguyen*Date  
Considered*5-20-03*

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## INFORMATION DISCLOSURE STATEMENT BY APPLICANT

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Sheet 4 Of 8

### COMPLETE IF KNOWN

Application Number	10/026,016
Filing Date	December 20, 2001
First Named Inventor	Ralph Johnson
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Examiner Name	Tuan M Nguyen
Attorney Docket Number	V637-02673 US

### FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No <sup>1</sup>	Foreign Patent Document			Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear	T <sup>6</sup>
		Country Code <sup>3</sup>	Number <sup>4</sup>	Kind Code <sup>5</sup> (if known)				
TN		EP	0 740 377	A1	10-30-1996	Hewlett-Packard Company		
		EP	0 740 377	B	10-30-1996	Hewlett-Packard Company		
		EP	0 765 014	A1	03-26-1997	France Telecom		
		EP	0 765 014	B1	07-28-1999	France Telecom		
		EP	0 822 630	A1	02-04-1998	Hewlett-Packard Company		
		EP	0 874 428	A2	10-28-1998	Motorola, Inc.		
		EP	0 874 428	A3	11-04-1998	Motorola, Inc.		
		EP	0 874 428	B1	15-04-1998	Motorola, Inc.		
		EP	1 294 063	A1	03-19-2003	Avalong Photonics AG		
		JP	57026492	A	02-12-1982	NEC Corp.		
		WO	98/007218	A1	02-19-1998	W.L. Gore & Associates, Inc.		
		WO	00/033433	A2	06-08-2000	Arizona Board of Regents		
		WO	00/033433	A3	06-08-2000	Arizona Board of Regents		
		WO	00/038287	A1	06-29-2000	Honeywell, Inc.		
		WO	00/052789	A2	02-29-2000	The Regents of the University of California		
		WO	00/052789	A3	02-29-2000	The Regents of the University of California		
		WO	00/065700	A2	11-02-2000	Gore Enterprise Holdings, Inc.		
		WO	00/065700	A3	11-02-2000	Gore Enterprise Holdings, Inc.		
		WO	01/016642	A2	03-08-2001	Agility Communications		
		WO	01/016642	A3	03-08-2001	Agility Communications		
		WO	01/017076	A2	03-08-2001	The Regents of the University of California		
TN		WO	01/017076	A3	03-08-2001	The Regents of the University of California		

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Signature

Tuan Nguyen

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Application Number 10/026,016  
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First Named Inventor Ralph Johnson  
Group Art Unit 2828  
Examiner Name Tuan M Nguyen  
Attorney Docket Number V637-02673 US

TN	WO	01/018919	A1	03-15-2001	The Regents of the University of California	
	WO	01/024328	A2	04-05-2001	Agility Communications	
	WO	01/024328	A3	04-05-2001	Agility Communications	
	WO	01/033677	A2	05-10-2001	Arizona Board of Regents	
	WO	01/033677	A3	05-10-2001	Arizona Board of Regents	
	WO	01/084682	A2	11-08-2001	Agility Communications, Inc.	
	WO	01/093387	A2	12-06-2001	Sandia Corporation	
	WO	01/093387	A3	12-06-2001	Sandia Corporation	
	WO	01/095444	A2	12-13-2001	Agility Communications, Inc.	
	WO	01/098756	A2	12-27-2001	The Regents of the University of California	
	WO	02/003515	A2	01-10-2002	Agility Communications, Inc.	
	WO	02/017445	A1	02-28-2002	The Regents of the University of California	
TN	WO	02/084829	A1	10-24-2002	Cielo Communications, Inc.	

## OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published	T <sup>2</sup>
TN		ALMUNEAU, G., et al., "Accurate control of Sb composition in AlGaAsSb alloys on InP substrates by molecular beam epitaxy", article, Journal of Crystal Growth, Vol 208, 05-06-1999, pgs 113-6.	
		ALMUNEAU, G., et al., "Improved electrical and thermal properties of InP-AlGaAsSb Bragg mirrors for long-wavelength vertical-cavity lasers", article, IEEE Photonics Technology Letters, Vol. 12, No 10, Oct 2000, pgs 1322-4.	
		ALMUNEAU, G., et al., "Molecular beam epitaxial growth of monolithic 1.55 $\mu$ m vertical cavity surface emitting lasers with AlGaAsSb/AlAsSb Bragg mirrors", article, Journal of Vacuum Science Technology, Vol 8, No 3, May/Jun 2000, pgs 1601-4.	
		BLACK, K., et al. "Double-fused 1.5 $\mu$ m vertical cavity lasers with record high $T_o$ of 132K at room temperature", article, Electronics Letters, Vol 34, No 20, 10-01-1998, pgs 1947-9.	
		BLUM, O., et al., "Electrical and optical characteristics of AlAsSb/BaAsSb distributed Bragg reflectors for surface emitting lasers", article, Applied Physics Letters, Vol 67, No 22, 11-27-1995, pgs 3233-5.	
		BLUM, O., et al., "Highly reflective, long wavelength AlAsSb/GaAsSb distributed Bragg reflector grown by molecular beam epitaxy on InP substrates", article, Applied Physics Letters, Vol. 66, No 3, 01-16-1995, pgs 329-31.	
TN		BOUCART, J., et al., "1mW CW-RT monolithic VCSEL at 1.55 $\mu$ m", article, IEEE Photonic Technology Letters, Vol 11, No 6, Jun 1999, pgs 629-31	

Examiner  
Signature

Tuan M Nguyen

Date  
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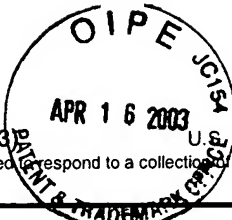
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Attorney Docket Number	V637-02673 US

TN	CAMPBELL, J., et al., "Quantum dot resonant cavity photodiode with operation near 1.3 $\mu\text{m}$ wavelength", article, Electronics Letters, Vol 33, No 15, 07-17-1997, pgs 1337-9.
	CHANG, C., et al., "Parasitics and design considerations on oxide-implant VCSELs", article, IEEE Photonics Technology Letters, Vol 13, No 12, Dec 2001, pgs 1274-6.
	CHOQUETTE, K., et al., "Room temperature continuous wave InGaAsN quantum well vertical-cavity lasers emitting at 1.3 $\mu\text{m}$ ", article, Electronics Letters, Vol 36, No. 16, 08-03-2000, pgs 1388-90.
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	DUDLEY, J., et al., "Water fused long wavelength vertical cavity lasers", conference proceedings, LEOS '93 Conference Proceedings. IEEE Lasers and Electro-Optics Society 1993 Annual Meeting, Nov 15/8, 1993, pgs 560-1.
	GOURLEY, F., et al., "Epitaxial semiconductor optical interference devices", invited paper, SPIE, Vol 792, 1987, pgs 178-189.
	GUDEN, M., et al., "Material parameters of quaternary III-V semiconductors for multiplayer mirrors at 1.55 $\mu\text{m}$ wavelength", article, Modeling Simulation Material Science Engineering, Vol 4 1966, pgs 349-57.
	GUO, C., et al., "Theoretical investigation of strained InGaAs/GaPAsSb type-II quantum wells on GaAs for long wavelength (1.3 $\mu\text{m}$ ) optoelectronic devices", post-conference paper, Dept of Electrical Engineering & Center for Solid State Electronics Research, ASU, Tempe, AZ, Apr 1999, pgs 30-1.
	GUY, D., et al., "Theory of an electro-optic modulator based on quantum wells in a semiconductor étalon", conference paper, Quantum Well and Superlattice Physics, Mar 23/4, 1987, pgs 189-96.
	HALL, E., et al., "Electrically-pumped, single-epitaxial VCSELs at 1.55 $\mu\text{m}$ with Sb-based mirrors", article, Electronics Letters, Vol 35, No 16, 08-05-1999, pgs 1-2.
	HALL, E., et al., "Increased lateral oxidation rates of AlInAs on InP using short-period superlattices", article, Applied Physics Letters, Vol 29, No 9, 01-08-2002, pgs 1100-4.
	HALL, E., et al., "Selectively etched undercut apertures in AlAsSb-based VCSELs", article, IEEE Photonics Technology Letters, Vol 13, No 2, Feb 2001, pgs 97-9.
	HEGBLOM, E., et al., "Small efficient vertical cavity lasers with tapered oxide apertures", article, Electronics Letters, Vol 34, No 9, 04-30-1998, pgs 895-6.
	HEROUX, J., et al., "Optical investigation of InGaAsN/GaAs strained multi-quantum wells", 20 <sup>th</sup> North American Conference on Molecular Beam Epitaxy, Oct 1-3, 2001, pg 2.
	HONG, Y., et al., "Improving Ga(In)Nas properties by migration-enhanced epitaxy and superlattices", 43 <sup>rd</sup> 2001 Electronic Material Conference, Session G, Paper G10, 06-27-2001.
	HONG, Y., et al., "Growth of GaInNAs quaternaries using a digital alloy technique", conference paper, Journal of Vacuum Science and Technology B: Microelectronics and Nanometer Structures, Oct 01/3, 2001, pgs 1163-6.
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5-20-03

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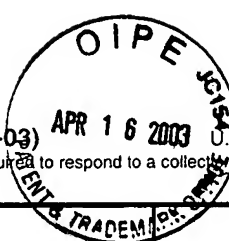
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Sheet 7 Of 8

### COMPLETE IF KNOWN

Application Number	10/026,016
Filing Date	December 20, 2001
First Named Inventor	Ralph Johnson
Group Art Unit	2828
Examiner Name	Tuan M Nguyen
Attorney Docket Number	V637-02673 US

TN		KIM, J., et al., "Epitaxially-stacked multiple-active-region 1.55 $\mu$ m lasers for increased differential efficiency", article, Applied Physics Letters, Vol 74, No 22, 05-31-1999, pgs 3251-3.	
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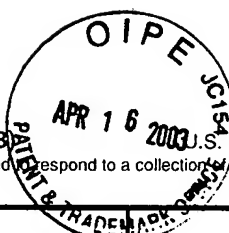
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TN	SEKIGUCHI, S., et al., "Long wavelength GaInAsP/InP laser with n-n contacts using AlAs/InP hole injecting tunnel junction", article, Japanese Journal of Applied Physics, Part 2, No 4B, 04-15-1999, pgs L443-5.
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